

What is claimed is:

1. A motor controller, comprising:

a synchronous motor;

a feed back detector mounted on said synchronous motor  
5 for detecting a position and a velocity of a rotor of said  
synchronous motor;

magnetic pole position detection means for detecting a  
magnetic pole position of the rotor of said synchronous motor  
from the output signal of said feed back detector;

10 inverter means for controlling an electric power to be  
supplied to said synchronous motor according to said magnetic  
pole position detected by said magnetic pole position detection  
means;

magnetic pole position estimation means for estimating  
15 the magnetic pole position of the rotor of said synchronous  
motor from the induced voltage of stator windings of said  
synchronous motor; and

magnetic pole position abnormality detection means for  
detecting an abnormality of said feed back detector by always  
20 comparing said magnetic pole position detected by said magnetic  
pole position detection means and the estimated magnetic pole  
position estimated by said magnetic pole position estimation  
means;

wherein, when said magnetic pole position abnormality  
25 detection means detects the abnormality of said feed back  
detector, said inverter means controls the electric power to  
be supplied to said synchronous motor according to said

estimated magnetic pole position obtained by said magnetic pole position estimation means.

2. The motor controller according to claim 1, wherein said  
5 magnetic pole position abnormality detection means determines that said feed back detector is abnormal in the case where the absolute value of the difference between said magnetic pole position detected by said magnetic pole position detection means and the estimated magnetic pole position estimated by said  
10 magnetic pole position estimation means is larger than a predetermined stipulated value.

3. The motor controller according to claim 2, wherein in the case where said feed back detector is an encoder, said magnetic  
15 pole position detection means calculates a mechanical angle of the encoder from the output signal of the encoder, and calculates an electrical angle representing the position of the magnetic pole from the obtained mechanical angle.

20 4. The motor controller according to claim 3, wherein said magnetic pole position estimation means calculates correlated voltage from the induced voltage of said stator windings, calculates a non-loaded estimated electrical angle from these correlated voltages, and calculates the loaded electrical angle  
25 from this estimated electrical angle.

5. The motor controller according to claim 3, wherein the

motor controller further comprises velocity calculating means for calculating a real angular velocity of said synchronous motor from said loaded electrical angle and the number of magnetic poles of the rotor of said synchronous motor and, when  
5 said magnetic pole position abnormality detection means determines that said feedback detector is abnormal, said loaded electrical angle is inputted to said velocity calculating means and the real angular velocity calculated by said velocity calculating means is inputted to said inverter means.

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